

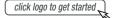
Vishay General Semiconductor

Dual Low-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.34 \text{ V}$ at $I_F = 2.5 \text{ A}$



DESIGN SUPPORT TOOLS

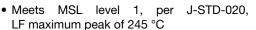




PRIMARY CHARACTERISTICS			
I _{F(AV)}	2 x 5.0 A		
V_{RRM}	45 V		
I _{FSM}	100 A		
V _F at I _F = 5.0 A	0.41 V		
T _J max.	150 °C		
Package	D ² PAK (TO-263AB)		
Circuit configuration	uration Common cathode		

FEATURES

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- High efficiency operation





RoHS COMPLIANT

 Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

MECHANICAL DATA

Case: D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)						
PARAMETER			VBT1045C	UNIT		
Maximum repetitive peak reverse voltage		V_{RRM}	45	V		
Maximum average forward rectified current (fig. 1)	per device	1	10	А		
	per diode	IF(AV)	5			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I _{FSM}	100	Α		
Operating junction and storage temperature range		T _J , T _{STG}	-40 to +150	°C		

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 2.5 A	——— T₁ – 25 °C	V _F ⁽¹⁾	0.44	-	V	
	I _F = 5.0 A			0.49	0.58		
	I _F = 2.5 A	T _A = 125 °C		0.34	-		
	I _F = 5.0 A			0.41	0.50		
Reverse current per diode	V _R = 45 V	T _A = 25 °C	I _R ⁽²⁾	-	500	μA	
	v _R = 45 v	T _A = 125 °C		5	15	mA	

Notes

 $^{(1)}$ Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms



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THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	VBT1045C	UNIT	
Typical thermal resistance	per diode	$R_{ hetaJC}$	3.5	°C/W	
	per device		2.5	C/VV	

ORDERING INFORMATION (Example)						
PACKAGE PREFERRED P/N UNIT WEIGHT (g) PACKA		PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-263AB	VBT1045C-E3/4W	1.38	4W	50/tube	Tube	
TO-263AB	VBT1045C-E3/8W	1.38	8W	800/reel	Tape and reel	

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

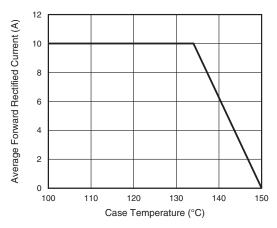


Fig. 1 - Maximum Forward Current Derating Curve

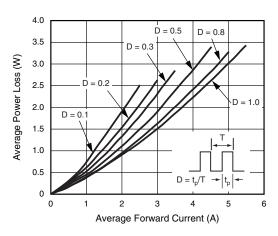


Fig. 2 - Forward Power Loss Characteristics Per Diode

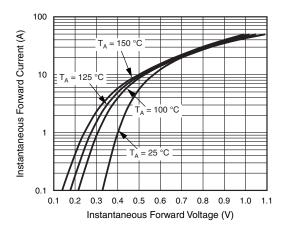


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

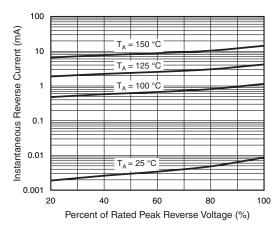


Fig. 4 - Typical Reverse Characteristics Per Diode



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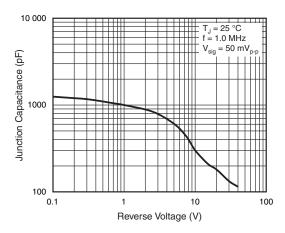


Fig. 5 - Typical Junction Capacitance Per Diode

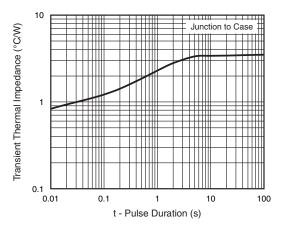
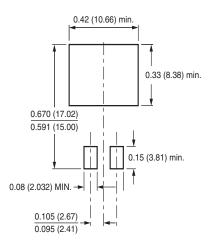


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB) 0.411 (10.45) 0.190 (4.83) 0.380 (9.65) 0.055 (1.40) 0.160 (4.06) 0.245 (6.22) 0.045 (1.14) MIN. 0.055 (1.40) 0.360 (9.14) 0.047 (1.19) 0.320 (8.13) 0.624 (15.85) Κ 2 0.591 (15.00) -0 to 0.01 (0 to 0.254) 0.110 (2.79) 0.090 (2.29) 0.037 (0.940) 0.021 (0.53) 0.027 (0.686) 0.014 (0.36) 0.105 (2.67) 0.140 (3.56) 0.095 (2.41) 0.205 (5.20) 0.110 (2.79) 0.195 (4.95)

Mounting Pad Layout





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